Amendment to the Claims:

Please amend the claims as follows.

Please cancel claims 16, 25 to 26, 49, 55 and 60, without prejudice or disclaimer.

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for stable transduction of a primary lymphoid cell, a myeloid cell or a hematopoietic progenitor cell ~~T cells and/or T cell stem cells~~ comprising

contacting the cell surface of **[[said]] the** primary lymphoid cell, myeloid cell or hematopoietic progenitor cell ~~T cell or T cell stem cells~~ at the same time *in vitro* or *ex vivo* with both a lentiviral vector and at least one cell stimulatory polypeptide which binds **[[said]]** the primary lymphoid cell, myeloid cell or hematopoietic progenitor cell by binding to a cell surface protein or to a ~~by binding to a T~~ cell surface receptor,

wherein after the contacting at least about 75% of the primary lymphoid cell, myeloid cell or hematopoietic progenitor **[[T]]** cells are stably transduced after about seven to ten days, or at about 14 days,

and the binding of the at least one cell stimulatory polypeptide to the cell surface results in stimulation of the cell,

and ~~the binding of the T cell surface receptor binding polypeptide to the T cell surface receptor~~ results in the primary lymphoid cell, myeloid cell or hematopoietic progenitor **[[T]]** cell being more receptive to transduction by the lentiviral vector.

Claim 2 (currently amended): The method of claim 1 further comprising continuous contacting of the primary lymphoid cell, myeloid cell or hematopoietic progenitor ~~T cells or T~~ cell ~~stem cells~~ *in vitro* or *ex vivo* with the lentiviral vector after the simultaneous contacting of the primary lymphoid cell, myeloid cell or hematopoietic progenitor ~~primary T cells or T cell stem~~ cells with the lentiviral vector and the at least one **[[T]]** cell surface protein or receptor binding stimulatory polypeptide.

Claim 3 (currently amended): The method of claim 1 further comprising continuous contacting of the primary lymphoid cell, myeloid cell or hematopoietic progenitor ~~T cells or T~~ cell ~~stem cells~~ *in vitro* or *ex vivo* with the at least one **[[T]]** cell surface protein or receptor binding stimulatory polypeptide after the simultaneous contacting of the primary lymphoid cell, myeloid cell or hematopoietic progenitor ~~primary T cells or T cell stem~~ cells with the lentiviral vector and the at least one **[[T]]** cell surface protein or receptor binding stimulatory polypeptide.

Claim 4 (currently amended): The method of claim 1 further comprising continuous contacting of the primary lymphoid cell, myeloid cell or hematopoietic progenitor ~~T cells or T~~ cell ~~stem cells~~ *in vitro* or *ex vivo* with the lentiviral vector and the at least one **[[T]]** cell surface protein or receptor binding stimulatory polypeptide after the initial simultaneous contact of the ~~primary T cells or T cell stem~~ cells with the lentivirus vector and the at least one **[[T]]** cell surface protein or receptor binding stimulatory polypeptide.

Claim 5 (currently amended): The method of claim 1 where **[[said]]** **the** contacting with a lentiviral vector occurs more than once.

Claim 6 (currently amended): The method of claim 1 wherein **[[said]]** **the** lentiviral vector is derived from a human immunodeficiency virus (HIV).

Claim 7 (currently amended): The method of claim 1 wherein **[[said]]** the at least one **[[T]]** cell surface protein or receptor binding stimulatory polypeptide comprises or is an antibody, an antigen binding fragment, or a ligand.

Claim 8 (currently amended): The method of claim 1 wherein **[[said]]** **the** lentiviral vector comprises at least one cis-acting nucleotide sequence derived from the nef, gag, pol, env, vif, vpr, vpu, tat or rev genes.

Claim 9 (currently amended): The method of claim 8 wherein **[[said]]** **the** cis-acting nucleotide sequence is not expressed or is a fragment or a mutant of the nef, gag, pol, env, vif, vpr, vpu, tat or rev genes.

Claim 10 (currently amended): The method of claim 1 wherein **[[said]]** **the** lentiviral vector is derived from HIV-1 or HIV-2.

Claim 11 (currently amended): The method of claim 1 wherein **[[said]]** **the** lentiviral vector is a pseudotyped vector.

Claim 12 (currently amended): The method of claim 11 wherein **[[said]]** **the** pseudotyped vector comprises the vesicular stomatitis virus G envelope protein.

Claim 13 (currently amended): The method of claim 1 wherein **[[said]]** **the** lentiviral vector is a chimeric vector comprising HIV sequences, wherein optionally the HIV sequences comprise HIV-1 and HIV-2 sequences.

Claim 14 (currently amended): The method of claim 1 wherein **[[said]]** the primary lymphoid cell, myeloid cell or hematopoietic progenitor is (a) a CD3 positive cell; (b) a primary **T** cell or (c) **[[**is**]]** a CD4 positive primary **T** cell.

Claim 15 (currently amended): The method of claim 1 wherein **[[said]]** the primary lymphoid cell, myeloid cell or hematopoietic progenitor is a monocyte or ~~**T** cell stem cell is~~ a **[[CD4]]** CD14 positive cell.

Claim 16 (canceled)

Claim 17 (currently amended): The method of claim 1 wherein said primary lymphoid cell, myeloid cell or hematopoietic progenitor ~~**T** cell or **T** stem~~ cell is a CD34 positive cell or a CD34 positive hematopoietic precursor thereof.

Claim 18 (currently amended): The method of claim 14 **[[1]]** wherein **[[said]]** **the** at least one cell surface protein or receptor binding stimulatory polypeptide comprises or is a **[[T]]** cell surface receptor binding polypeptide comprising ~~comprises~~ an ~~FLT-3 ligand; a TPO ligand Kit ligand;~~ antibody ~~antibodies~~ that has **[[**have**]]** the same cell surface binding specificity as ~~FLT-3, TPO or Kit ligand;~~ a CD3 ligand; a CD28 ligand; a CD25 ligand; a CD71 ligand; a CD69 ligand; a CD49 ligand; or a ~~antibodies that have are the same~~ cell surface protein or receptor binding stimulatory polypeptide having the same cell surface binding specificity as interleukin-2 (IL-2) or phytohemaglutinin (PHA) ~~specificity of CD3, CD25, CD28, CD69 or CD71 ligand~~.

Claim 19 (currently amended): The method of claim 1 wherein **[[said]]** **the** at least one cell surface protein or receptor binding stimulatory polypeptide comprises or is: ~~T cell surface receptor binding polypeptide comprises~~ a FLT-3 ligand, a thrombopoietin (TPO), a ligand for a TPO receptor, stem cell factor (SCF), a **[[and]]** Kit ligand; or, an antibody or a polypeptide having the same cell surface binding specificity as FLT-3 ligand, thrombopoietin (TPO) ligand, stem cell factor (SCF) or Kit ligand.

Claim 20 (currently amended): The method of claim 15 wherein the at least one cell surface protein or receptor binding stimulatory polypeptide comprises or ~~said T stem cell~~ is a ~~dendritic cell or a cell capable of differentiating into a dendritic cell~~ monocyte surface receptor binding polypeptide comprising a granulocyte-macrophage colony-stimulating factor (GM-CSF), interleukin-4 (IL-4), tumor necrosis factor (TNF) alpha, interferon alpha or interferon gamma.

Claim 21 (currently amended): The method of claim 1 wherein **[[said]]** **the** at least one **[[T]]** cell surface protein or receptor binding stimulatory polypeptide comprises CD34, CD3, CD14, CD28 or an antibody~~, GM-CSF, IL-4, TNF-alpha; GM-CSF, interferon-alpha; and antibodies~~ or other binding stimulatory polypeptide ~~polypeptides~~ that has **[[**have**]]** the same cell surface binding specificity as CD34, CD3, CD14, or CD28~~, GM-CSF, IL-4, or TNF-alpha; GM-CSF or interferon-alpha~~.

Claim 22 (currently amended): The method of claim 18 **[[1]],** wherein **[[said]] the** at least one **[[T]]** cell ~~receptor~~ surface protein or receptor binding stimulatory polypeptide comprises a CD3 binding antibody ~~antibodies~~ or cell surface binding fragments thereof, a CD28 binding antibody ~~antibodies~~ or cell surface binding fragments thereof, combinations of **[[said]] the** antibodies or cell surface binding fragments thereof, or polypeptides having the same cell surface binding specificities as the antibodies.

Claim 23 (currently amended): The method of claim 22 wherein **[[said]] the** at least one cell surface protein or receptor binding stimulatory polypeptide is a **T** cell surface receptor binding polypeptide comprising ~~comprises~~ (a) a combination of CD3 and CD28 antibodies immobilized on a bead or a surface, or (b) the antibody combination of (a), wherein the bead or surface comprises coated beads.

Claim 24 (previously presented): The method of claim 1, further comprising culturing the cells under conditions conducive to growth and/or proliferation.

Claims 25 to 26 (canceled)

Claim 27 (currently amended): The method of claim 24 wherein **[[said]] the** culturing is for about seven days.

Claim 28 (currently amended): The method of claim 27 wherein **[[said]] the** culturing is for about 14 days.

Claim 29 (currently amended): The method of claim 1 wherein **[[said]] the** contacting the surface of the cells at the same time *in vitro* or *ex vivo* with both the lentiviral vector and the at least one **[[T]]** cell surface protein or receptor binding stimulatory polypeptide further comprises (a) contacting the **[[T]]** cell surface with a lentiviral vector for about 24 hours; or, (b) step (a) is repeated at least once.

Claim 30 (previously presented): The method of claim 1 wherein the lentiviral vector is present at an MOI of less than 500, or, the cells are transduced with the vector at a multiplicity of infection (MOI) such that the copies of vector per transduced cell is from about 1 to about 100.

Claims 31 and 32 (canceled)

Claim 33 (currently amended): The method of claim 1 wherein **[[said]]** **the** contacting occurs *ex vivo*.

Claim 34 (currently amended): A method for stable transduction of a primary lymphoid cell, a myeloid cell or a hematopoietic progenitor cell ~~T cells~~ and/or ~~T cell stem cells~~ comprising

(a) isolating ~~an individual~~ a primary lymphoid cell, a myeloid cell or a hematopoietic progenitor **[[T]]** cell ~~and/or a T stem cell~~; and

(b) contacting the ~~primary T cell or T stem~~ cell of step (a) simultaneously *in vitro* or *ex vivo* with a lentiviral vector and an at least one cell stimulatory polypeptide that physically interacts with a receptor on the surface of the ~~primary T cell or T stem~~ cell of step (a),

wherein greater than about 75% of the primary lymphoid cell, myeloid cell or hematopoietic progenitor ~~T cells or T stem~~ cells are stably transduced after about seven to ten days, or at about 14 days,

and the binding of the at least one cell stimulatory polypeptide to the cell surface results in stimulation of the cell

and ~~the binding of the cell surface receptor binding polypeptide to the T cell or T stem cell surface receptor~~ results in the primary lymphoid cell, myeloid cell or hematopoietic progenitor cell being more receptive to transduction by the lentiviral vector.

Claim 35 (currently amended):The method of claim 34 further comprising continuous contacting of the primary lymphoid cell, myeloid cell or hematopoietic progenitor ~~T cells or T~~ cell ~~stem cells~~ *in vitro* or *ex vivo* with the lentiviral vector after the simultaneous contacting of the primary lymphoid cell, myeloid cell or hematopoietic progenitor ~~primary T cells or T cell stem~~

cells with the lentiviral vector and the at least one **[[T]]** cell surface protein or receptor binding stimulatory polypeptide.

Claim 36 (currently amended): The method of claim 34 further comprising continuous contacting the primary lymphoid cell, myeloid cell or hematopoietic progenitor cell ~~T cells or T stem cells~~ *in vitro* or *ex vivo* with the at least one cell surface binding polypeptide after the simultaneous contacting of the lentiviral vector and the at least one cell surface binding polypeptide.

Claim 37 (currently amended): The method of claim 34 further comprising continuous contacting of the primary lymphoid cell, myeloid cell or hematopoietic progenitor cell ~~T cells or T cells~~ *in vitro* or *ex vivo* with the lentiviral vector and the at least one cell surface binding polypeptide after the initial simultaneous contact of the lentivirus vector and the at least one cell surface protein or receptor binding stimulatory polypeptide.

Claim 38 (currently amended): The method of claim 34 wherein **[[said]] the** contacting with a lentiviral vector occurs more than once.

Claim 39 (currently amended): The method of claim 34 wherein **[[said]] the** cells are human cells.

Claim 40 (currently amended): The method of claim 34 wherein **[[said]] the** cell surface protein or receptor binding stimulatory polypeptide comprises an antibody, an antigen binding fragment, or a ligand.

Claim 41 (currently amended): The method of claim 34 wherein **[[said]] the** lentiviral vector comprises at least one cis-acting nucleotide sequence derived from the nef, gag, pol, env, vif, vpr, vpu, tat or rev genes.

Claim 42 (currently amended): The method of claim 41, wherein **[[said]]** **the** cis-acting nucleotide sequence is not expressed or is a fragment or a mutant of the nef, gag, pol, env, vif, vpr, vpu, tat or rev genes.

Claim 43 (currently amended): The method of claim 34 wherein **[[said]]** **the** lentiviral vector is an HIV-derived vector.

Claim 44 (currently amended): The method of claim 34 wherein **[[said]]** **the** lentiviral vector is a pseudotyped vector.

Claim 45 (currently amended): The method of claim 44 wherein **[[said]]** **the** pseudotyped vector contains the vesicular stomatitis virus G envelope protein.

Claim 46 (canceled)

Claim 47 (currently amended): The method of claim 34 wherein **[[said]]** the primary lymphoid cell, myeloid cell or hematopoietic progenitor is a primary **T** cell or is a CD3 **[[CD4]]** positive primary **T** cell.

Claim 48 (currently amended): The method of claim 34 wherein **[[said]]** the primary lymphoid cell, myeloid cell or hematopoietic progenitor is a monocyte or ~~**T** cell stem cell~~ is a CD14 **[[CD4]]** positive cell.

Claim 49 (canceled)

Claim 50 (currently amended): The method of claim 34 wherein said primary lymphoid cell, myeloid cell or hematopoietic progenitor cell is a CD34 positive cell or a CD34 positive hematopoietic precursor thereof.

Claim 51 (canceled)

Claim 52 (currently amended): The method of claim 34 wherein **[[said]] the** at least one cell surface protein or receptor binding stimulatory polypeptide comprises or is a T cell surface receptor binding polypeptide comprising ~~comprises~~ an ~~FLT-3 ligand; a TPO ligand Kit ligand;~~ antibody ~~antibodies~~ that has **[[**have**]]** the same cell surface binding specificity as ~~FLT-3, TPO or Kit ligand;~~ a CD3 ligand; a CD28 ligand; a CD25 ligand; a CD71 ligand; a CD69 ligand; a CD49 ligand; or a ~~antibodies that have are the same~~ cell surface protein or receptor binding stimulatory polypeptide having the same cell surface binding specificity as interleukin-2 (IL-2) or phytohemaglutinin (PHA) ~~specificity of CD3, CD25, CD28, CD69 or CD71 ligand~~.

Claim 53 (currently amended): The method of claim 34 wherein **[[said]] the** at least one cell surface protein or receptor binding stimulatory polypeptide comprises or is: ~~T cell surface receptor binding polypeptide comprises~~ a FLT-3 ligand, a thrombopoietin (TPO), a ligand for a TPO receptor, stem cell factor (SCF), a **[[and]]** Kit ligand; or, an antibody or a polypeptide having the same cell surface binding specificity as FLT-3 ligand, thrombopoietin (TPO) ligand, stem cell factor (SCF) or Kit ligand.

Claims 54 to 55 (canceled)

Claim 56 (currently amended): The method of claim 47 **[[34]]** wherein **[[said]] the** at least one cell surface protein or receptor binding stimulatory polypeptide comprises or is a **T** cell surface binding polypeptide comprising ~~comprises~~ (a) CD3 antibodies or cell surface binding fragments thereof, CD28 antibodies and cell surface binding fragments thereof, combinations of **[[said]] the** antibodies and cell surface binding fragments thereof, or binding polypeptides that have the same cell surface binding specificities as the antibodies, or

(b) the **[[T]]** cell surface protein or receptor binding stimulatory polypeptide of (a), wherein the least one cell surface binding stimulatory polypeptide comprises at least two of the cell surface binding polypeptides immobilized on a bead or a surface.

Claim 57 (currently amended): The method of claim 56 wherein **[[said]] the** at least one cell surface binding stimulatory polypeptide comprises a combination of CD3 and CD28 antibodies immobilized on coated beads.

Claim 58 (previously presented): The method of claim 34 further comprising culturing the cells under conditions conducive to growth and/or proliferation.

Claim 59 (currently amended): The method of claim 58 wherein **[[said]] the** conditions comprise further incubation with a cell surface binding stimulatory polypeptide or a cytokine.

Claim 60 (canceled)

Claim 61 (currently amended): The method of claim 58 wherein **[[said]] the** culturing is for about seven days.

Claim 62 (currently amended): The method of claim 58 wherein **[[said]] the** culturing is for about 14 days.

Claim 63 (currently amended): The method of claim 34 wherein **[[said]] the** contacting the cells with a lentiviral vector is for about 24 hours and is optionally repeated at least once.

Claim 64 (previously presented): The method of claim 34 wherein the lentiviral vector is present at an MOI of less than 500, or, the cells are transduced with the vector at a multiplicity of infection (MOI) such that the copies of vector per transduced cell is from about 1 to about 100.

Claim 65 (canceled)

Claim 66 (currently amended): The method of claim 34 wherein **[[said]] the** contacting occurs *ex vivo*.

Claim 67 (currently amended): The method of claim 34 wherein **[[said]]** **the** lentiviral vector is derived from a human immunodeficiency virus (HIV), wherein optionally the HIV is HIV-1 or HIV-2.

Claim 68 (currently amended): The method of claim 34 wherein **[[said]]** **the** lentiviral vector is a chimeric vector comprising HIV-1 and HIV-2 sequences.

Claim 69 (previously presented): The method of claim 1 or claim 34, wherein greater than 80%, 85%, 89%, 90%, 91%, 92%, 93%, 94% or 95% of the cells are stably transduced after about 14 days.

Claim 70 (previously presented): The method of claim 34 wherein the individual is infected with (a) a human immunodeficiency virus (HIV), or (b) HIV-1 or HIV-2.

Claim 71 (currently amended): The method of claim 70, wherein (a) the cells isolated from the HIV-infected individual are pre-stimulated with the at least one cell surface binding stimulatory polypeptide, or (b) the method of step (a) wherein the cells are pre-stimulated with the at least one cell surface binding stimulatory polypeptide within twenty four (24) hours prior to simultaneously contacting the cells *in vitro* or *ex vivo* with the lentiviral vector and the at least one cell surface binding stimulatory polypeptide.

Claims 72 to 82 (canceled)

Claim 83 (previously presented): The method of claim 1 or claim 34, wherein at least 75% of the cells remain stably transduced after about 14 days.

Claim 84 (currently amended): The method of claim 1, the cell surface binding stimulatory polypeptide further comprises a lipid, a nucleic acid, a carbohydrate or an ion.

Claim 85 (previously presented): The method of claim 1 or claim 34, further comprising introducing the transduced cell into a living subject.

Claim 86 (previously presented): The method of claim 1 or claim 34, further comprising introducing the transduced cell into a tissue or an organ.

Claim 87 (previously presented): The method of claim 1 or claim 34, further comprising introducing the transduced cell into a blastocyst.

Claim 88 (currently amended): A method for stable transduction of a primary lymphoid cell, a myeloid cell or a hematopoietic progenitor cell ~~T cells and/or T cell stem cells~~ with a lentiviral vector comprising

cell surface of **[[said]] the** primary lymphoid cell, myeloid cell or hematopoietic progenitor cell ~~T cell or T cell stem cells~~ *in vitro* or *ex vivo* with a lentiviral vector and at least one cell surface polypeptide or receptor binding cell stimulatory polypeptide, wherein the lentiviral vector is pseudotyped, ~~wherein the pseudotyping comprises co-transfecting or co-infecting a packaging cell with both the lentiviral vector genetic material and genetic material encoding at least one envelope protein of another virus or a cell surface receptor binding polypeptide,~~

wherein after the contacting at least about 75% of the cells are stably transduced after about seven to ten days, or at about 14 days, and optionally at least 75% of the cells remain stably transduced after about 14 days,

and the binding of the at least one polypeptide to the cell surface results in stimulation of the cell, and the binding of the cell surface receptor binding polypeptide to the cell surface receptor results in the cell being more receptive to transduction by the lentiviral vector.

Claim 89 (previously presented): The method of claim 88, wherein the lentiviral vector is pseudotyped with a *Rhabdovirus*.

Claim 90 (previously presented): The method of claim 89, wherein the *Rhabdovirus* is a Vesicular Stomatitis Virus envelope G (VSV-G) protein.

Claims 91 and 92 (canceled)

Claim 93 (currently amended): The method of claim 1, claim 34, or claim 88, wherein **[[said]] the** at least one cell surface binding stimulatory polypeptide comprises at least two cell surface binding polypeptides comprising an FLT-3 ligand; a thrombopoietin (TPO), a ligand for a TPO receptor; a Kit ligand; stem cell factor (SCF); interleukin-2 (IL-2); interleukin-4 (IL-4); granulocyte-macrophage colony-stimulating factor (GM-CSF); tumor necrosis factor (TNF) alpha; interferon alpha; interferon gamma; or phytohemaglutinin (PHA); or antibodies that have the same cell surface binding specificity as FLT-3, thrombopoietin (TPO), or Kit ligand; **a** CD3 ligand; a CD28 ligand; a CD25 ligand; a CD71 ligand; a CD69 ligand; a CD49 ligand; or antibodies that have are the same cell surface binding specificity of CD3, CD25, CD28, CD49, CD69 or CD71 ligand.

Claim 94 (previously presented): The method of claim 1, wherein the at least one cell surface binding polypeptide further comprises a lipid, a nucleic acid, a carbohydrate or an ion.

Claims 95 and 96 (canceled)

Claim 97 (currently amended): The method of claim 93, wherein the at least two cell surface binding stimulatory polypeptides comprise immobilized αCD3 and αCD28.

Claim 98 (currently amended): The method of claim 22, wherein the at least one cell surface binding stimulatory polypeptide comprises at least two cell surface binding polypeptides immobilized on a bead or a surface.

Claim 99 (previously presented): The method of claim 88, wherein the lentiviral vector is present at an MOI of less than 500, or, the cells are transduced with the vector at a multiplicity of infection (MOI) such that the copies of vector per transduced cell is from about 1 to about 100.

Claim 100 (new): A method for stable transduction of a $CD4^+$ primary T cell, a CD14+ primary monocyte and/or a $CD34^+$ stem cell comprising

contacting the surface of the primary T cell, monocyte or stem cell at the same time *in vitro* or *ex vivo* with both a lentiviral vector and at least one polypeptide which binds the cell surface by binding to at least one cell surface receptor,

wherein at least about 75% of the cells are stably transduced after about seven to ten days, or at about 14 days,

and (a) if the primary T cell is $CD4^+$ or $CD8^+$, the at least one T cell surface receptor is a CD3 polypeptide, a CD28 polypeptide or a combination thereof; an interleukin-2 receptor; or, (b) if the primary monocyte is CD14+, the at least one monocyte surface receptor is an interleukin-4 (IL-4) receptor, a granulocyte-macrophage colony-stimulating factor (GM-CSF) receptor; a tumor necrosis factor (TNF) alpha receptor; an interferon alpha receptor or an interferon gamma receptor; or (c) if the primary stem cell is $CD34^+$, the at least one T cell surface receptor is a FLT-3 receptor polypeptide, a thrombopoietin (TPO) receptor polypeptide or a Stem Cell Factor polypeptide receptor,

and the binding of the primary cell surface receptor binding polypeptide to the cell surface receptor results in the cell being more receptive to transduction by the lentiviral vector.

Claim 101 (new): A method for stable transduction of a primary T cell, a monocyte and/or a stem cell with a lentiviral vector comprising

contacting the cell at the same time *in vitro* or *ex vivo* with a lentiviral vector and at least one cell surface receptor binding polypeptide, wherein the lentiviral vector is pseudotyped, and the pseudotyping comprises co-transfecting or co-infecting a packaging cell with both the lentiviral vector genetic material and genetic material encoding at least one envelope protein of another virus or a cell surface receptor-binding polypeptide,

wherein (i) at least about 75% of the cells are stably transduced after about seven to ten days, (ii) at least about 75% of the cells are stably transduced at about 14 days, or (iii) at least 75% of the cells remain stably transduced after about 14 days,

and (a) if the primary T cell is $CD4^+$ or $CD8^+$, the at least one T cell surface receptor is a CD3 polypeptide, a CD28 polypeptide or a combination thereof; an interleukin-2 receptor; or, (b) if the primary monocyte is CD14+, the at least one monocyte surface receptor is an interleukin-4 (IL-4) receptor, a granulocyte-macrophage colony-stimulating factor (GM-CSF) receptor; a tumor necrosis factor (TNF) alpha receptor; an interferon alpha receptor or an interferon gamma receptor; or (c) if the primary stem cell is $CD34^+$, the at least one T cell surface receptor is a FLT-3 receptor polypeptide, a thrombopoietin (TPO) receptor polypeptide or a Stem Cell Factor polypeptide receptor,

and the binding of the cell surface receptor binding polypeptide to the cell surface receptor results in the cell being more receptive to transduction by the lentiviral vector.